NATURAL RESOURCES CONSERVATION SERVICE

DOCUMENTATION REQUIREMENTS

IRRIGATION FIELD DITCH

CODE 388

REFERENCES

Methods used in the survey, design, and construction of this standard should reference:

- Louisiana FOTG IV Conservation Practice Standard for this practice.
- National Engineering Handbook (NEH) - Part 640, Technical Release 62, Engineering Layout, Notes, Staking and Calculations
- NEH - Part 650, Engineering Field Handbook (EFH) Chapter 1 Engineering Surveys.
- National O&M Manual, Part 500
- LA Drainage Guide
- NEH Part 620, Technical Release 25, Design of Open Channels, Chapter 6, Figure 6-2.
- NRCS Conservation Practice Standard for Open Channels, Code 582
- NEH - Part 650, EFH, Chapter 14 Drainage.

PRELIMINARY INVESTIGATION

A preliminary investigation shall be conducted to determine the feasibility of the practice in regards to the purpose and applicability of the conservation practice relative to the site conditions, topography, soils, cost, etc. The designer shall review the criteria in the conservation practice standard prior to the preliminary investigation and during the final design to insure the implementation of this practice addresses the intended resource concerns.

During the preliminary investigation, sufficient data must be gathered and analyzed to determine whether to proceed with the practice.

DESIGN SURVEY

Run sufficient profiles to determine:

1. High points in field to determine direction of field slope.
2. Locations of checks, turnouts, and other structures.

All surveys shall be tied to temporary or permanent benchmarks (assumed or actual) that will not be damaged during construction.

DESIGN

Determine planned elevation and grades, cuts and fills, and volume of earth to be moved.

Prepare cut sheet, which shows the planned cuts and fills, and give to farmer or contractor for his use during the earth moving process.

PLANS AND SPECIFICATIONS

Specifications. A copy of the Conservation Practice Standard and the Construction Specifications for this practice shall be provided to the cooperator. The specifications shall provide sufficient details to facilitate a quality installation and reflect the intent of the designer.

Plans. The engineering drawings that represent the location, shape, size, and configuration of the engineering practice to be installed with sufficient detail to support a quality installation shall be provided to the cooperator. Plans shall be in accordance with policy stated in 210-V-NEM §541. As a minimum plans shall be provided that include the following:

1. LA-ENG-8 Irrigation Ditch Design and Data Sheet
2. Planned location of the proposed practice. Also benchmarks used in the

design surveys shall be shown on the plan drawings.

3. A profile sheet showing the items listed in form LA-ENG-8.
4. A cut sheet showing the planned cuts and fills.
5. Locations of any additional borrow areas from which materials will be taken to supplement the fills required on the cut sheet.

REVIEW AND APPROVAL OF PLANS AND SPECIFICATIONS BY LANDOWNER

A copy of the Conservation Practice Standard, the Construction Specifications for this practice and project specific plans shall be reviewed and approved by the cooperator in accordance with 210-V-NEM LA501.00-80.

OPERATION AND MAINTENANCE.

An operation and maintenance (O&M) Plan shall be developed during the design process and provided to the landowner. The O&M Plan shall provide sufficient information for the landowner or operator to properly operate and maintain the practice for its intended life. The O&M Plan must be reviewed with the landowner. See the respective conservation practice standard and the National O&M Manual, Part 500 for further policy and guidance.

CONSTRUCTION LAYOUT

Excavator Ditches

Set centerline stakes for alignment of irrigation ditch levees.

Centerline of ditch levees may be marked with a plow furrow.

Set height stakes on outside toe of at least one levee at 200-feet intervals, or mark fill height on outside toe stakes. Include shrinkage.

Blade Ditches

Set centerline stake for alignment of ditch bottom. Centerline of ditch may be marked with a plow furrow.

Offset reference stakes may be set every 200 fete and fill heights of levee marked on stakes. Include shrinkage. The use of these stakes is optional.

All Ditches Stake locations of structures as needed for installation.

CONSTRUCTION CHECK

Reference notes to bench marks.

Profile the completed ditch, taking rod readings on top of each levee, at least once every 200 feet. For ditches constructed with blade equipment or below ground level, profile the completed ditch, taking rod readings at least once every 200 feet as needed to determine planned grades have been met.

Cross-section completed irrigation ditch at least once every 1000 feet, at least one cross-section per canal. The ditch shall also be cross-sectioned at what appears to be its smallest section to insure that it has required capacity.

Record dimensions and elevations of turnouts, checks, culverts and drops installed as part of the irrigation ditch. Check all culverts and conduits to determine that they have adequate sizes, lengths and strengths.

Chain all ditches, either during the design survey, or the construction layout, or the construction check. However, lengths of ditches may be determined by pacing or scaling on aerial photographs when no cost sharing is involved and payment will not be made on a yardage basis.

A tolerance of 0.2 foot below the design height (including shrinkage allowance) is acceptable for levees constructed by excavator type equipment. A tolerance of 0.1 foot is acceptable for levees constructed by blade equipment.

Where levees constructed either by excavation or blade equipment have been compacted by heavy rains prior to being checked, planned heights may be lowered by the designer by a reasonable amount in proportion to the estimated settlement. Where allowances are made for compaction due to rains, the designer will note this on construction check notes.

RECORDING DATA

Engineering field notes shall conform to the National Engineering Handbook (NEH) Part 640, Technical Release No. 62 (TR-62) Engineering Layout, Notes, Staking and Calculations.

When survey data is gathered electronically, conventional field notes shall also be recorded to capture any survey information not electronically captured. This type of information may include but not be limited to project name, practice name, purpose of survey (i.e. design, construction layout, etc.), survey party members and their assignments, benchmark descriptions and general location sketch of the project, surveyor comments regarding observations in the field relative to the conservation practice being planned or applied.

Field notes shall be recorded in looseleaf or bound field notebooks. Design data shall be recorded on form LA-ENG 8, Irrigation Ditch Design and Data Sheet. Hard copies of electronically generated survey and design data shall also be attached to the form LA-ENG-8.

Check the field notes carefully to determine all specifications have been met. Date and sign statement, “This practice meets specifications.” Note any exceptions.

CERTIFYING QUANTITIES

The extent of this practice to be certified for cost share payments shall be the planned quantities after it has been determined that the practice has been completed to the planned dimensions and meets specifications. Yardage shall be calculated from settled height by the cross-sectional end area method, or from approved tables. Yardage shall not be certified in excess of that actually moved.

RECORDING COMPLETED PRACTICE

Show the completed practice in red on the field office copy of the conservation plan map, or, if not available, on aerial photograph or overlay. (See Standard Conservation Symbols). An overlay may be used in lieu of the conservation plan map to avoid overcrowding. Number, if more than one practice of this type is installed on the farm. Show date work completed in black ink.

FILING NOTES AND RECORDS

See General Manual 120, Administrative Services; Part 408, Records; Subpart D, Exhibits; 210, Engineering; 210-11, Conservation Practices.

A hard copy of all conventional and electronic survey notes and design information shall be retained and filed in the engineering folder.

All electronic files shall also be filed in the client’s Engineering Folder of the Customer Service Toolkit.